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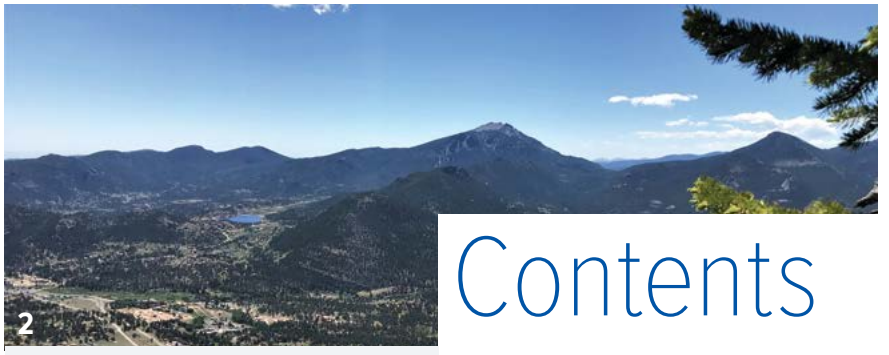

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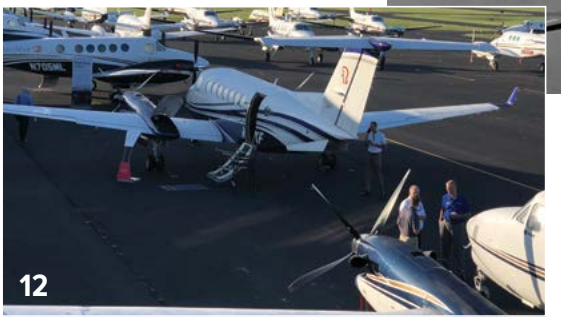
by Matthew McDaniel



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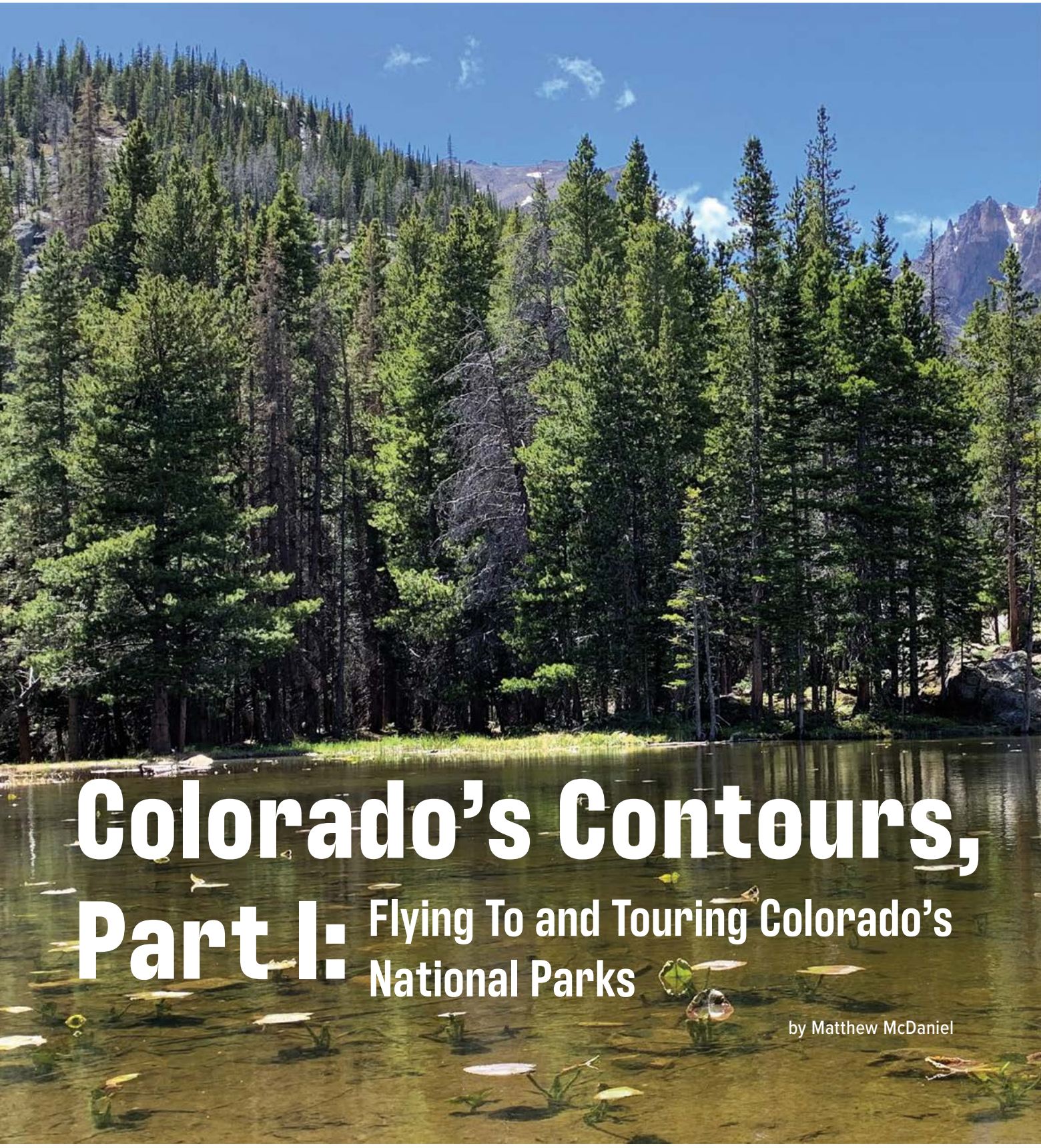
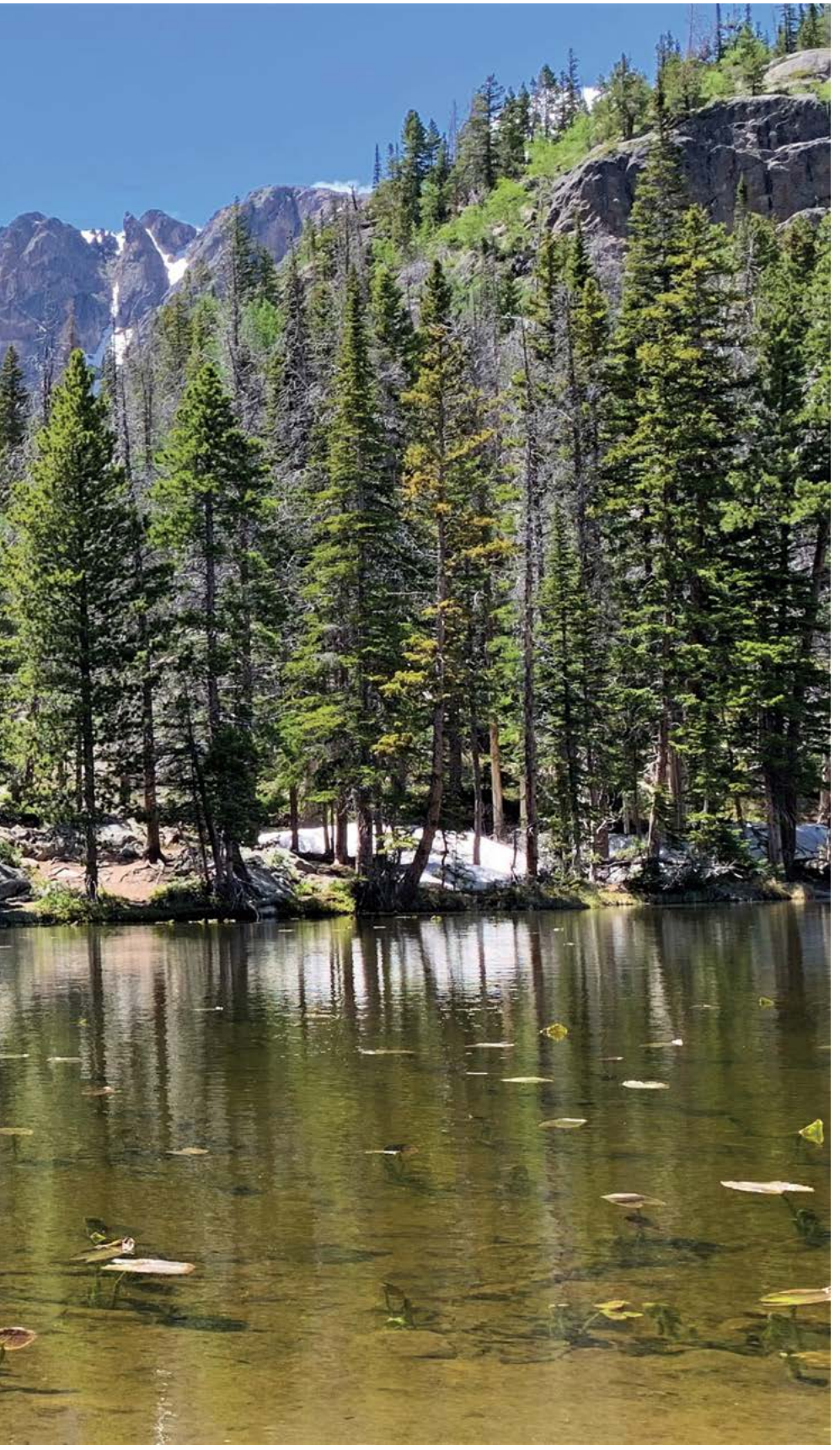


Colorado's Contours, Part I: Flying To and Touring Colorado's National Parks

by Matthew McDaniel



Many hikes (short and long) within Rocky Mountain National Park lead to crystal clear alpine lakes. Many will still have snow present until June or even July, as can be seen on the far right shore here.

An old joke among pilots is that flying to anywhere in eastern Colorado is basically just a flight into western Kansas. Indeed, the eastern one-third of Colorado has more in common with Kansas and Nebraska than it does with the mountainous terrain that Colorado is famous for. What is easy to miss is the steady rise in elevation, even of relatively flat terrain that happens as one flies westward across the expanse of the American Great Plains toward the Colorado Rockies. In eastern Kansas and Nebraska, typical airport elevations are in the 1,000-foot range. By the time one reaches Denver, the ground has risen to over a mile above sea-level. Thus, even its non-mountainous airports, such as the massive airline hub of Denver International (DEN) lie at 5,500-plus feet.

Few national parks offer such abundant and diverse wildlife spotting as Rocky Mountain National Park. Colorful and precocious birds, as well as birds of prey, Elk, Moose and marmots are all possible sightings while venturing throughout the park.

Of course, it is the abrupt rise of the Rocky Mountains and the western two-thirds of Colorado that have made the state synonymous with high-elevation adventure. Colorado is truly a natural wonderland of mountain diversity. This applies whether you're there for that very reason or you are there for an unplanned layover. Purposeful tourists come to Colorado's mountain areas for everything from skiing, hiking and mountain climbing to motorcycling, wildlife pursuits and all manner of camping. However, Colorado's wide array of airport choices also lend themselves well to unplanned day trips or weekend excursions. One thing that Colorado has in spades is protected lands within the National Park System (NPS). Other neighboring states, such as Utah, might get more attention for their many reknowned National Parks. However, Colorado's NPS lands, while somewhat lesser known, are no less spectacular.

Mountain Flying Precautions and Agendas

Flying deep into the heart of mountainous areas should never be taken lightly by any pilot. Being equipped with turbine power is

The stately and sometimes ominous Stanley Hotel in RMNP's gateway city, Estes Park, Colorado. This century-plus-old hotel helped to inspire Stephen King's book (and later, movie) *The Shining.*

no guarentee of adequate performance, aeronautical knowledge or airmanship for coping with situations that only mountain flying can conjure up. The purpose of this article is not to teach mountain flying techniques. But, I would be remiss to write anything about flying within Colorado without also emphasizing how critical specific mountain flying instruction is. Colorado is home to some of the most challenging commerical airports in the United States. For visiting pilots there is almost no airport west of Colorado's Rocky Mountain Front Range that is not inherently challenging, yet also beautiful. Factor in summer heat, and the density altitudes easily soar into levels no pilot can safely ignore. Thus, the often long runways encountered (by lowland standards) can quickly become barely or even less than adequate in the warmer months. King Airs are just the type of load-hauling aircraft that tourists and part-time residents seek when flying into mountain airports to begin their outdoor adventures. Knowing the capabilities of yourself and your aircraft before launching into or out of such areas cannot be overstated. The mountain regions of Colorado contain 13 NPS sites, including four national parks and several national monuments. All have public-use airports within reasonable driving distances that offer facilities appropriate to King Air operations. None should be utilized without first becoming thoroughly familiar with the surrounding terrain, facility limitations and local operational requirements.

The sheer number and size of Colorado's public lands is daunting. Beyond the national parks and monuments are national recreation and wilderness areas and many historical and archaeological sites. Many state and county parks rival small national parks that exist in other states. Even some city parks offer terrain wholly unique within the Mountain West, such as The Garden of the Gods in Colorado Springs. To detail them all would be far beyond the scope of this article series. Instead, we will focus on Colorado's four national parks and the aviation facilities that can best be utilized to partake of each (two here and two in the upcoming Part II). For our discussion, we'll assume a routing into Colorado from the east and a counter clockwise circuit. We'll use Rocky Mountain National Park, north and west of Denver, as the initial destination.

Rocky Mountain National Park (RMNP)

Considered Colorado's signature national park, RMNP is both vast and diverse, encompassing over 265,000 acres. It has five visitor centers and can be entered from the east, north or west. The most popular entrance is via the mountain hamlet of Estes Park, which feeds tourists nicely into three of the park's visitor centers. Home of the historic Stanley Hotel (inspiration for the hotel in Stephen King's, *The Shining*), Estes Park bustles with activity year around, yet it lacks an airport of its own.

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The view from atop Deer Mountain (10,013 feet) looking southeast toward the Beaver Meadows Visitor Center and Entrance Station. While the 3.0-mile hike (one-way) to reach here requires a bit of rock scrambling, it is mostly easy-to-moderate for a relatively fit person and only climbs 1,100 feet from the trail head to the peak.

Thus, Northern Colorado Regional Airport (FNL), formerly known as Ft. Collins-Loveland Municipal Airport, is a popular point from which to begin adventures into RMNP's northern and eastern areas. FNL lies just above 5,000 feet and boasts an 8,500-foot main runway. Runway 33 is equipped with both ILS and GPS/LPV approaches and runway 15 has a single GPS/LNAV approach. Having a part-time control tower and full service FBO (Ft. Collins-Loveland Jet Center) makes it an easy choice. From there, it's about an hour's drive along Highway 34, curving and twisting alongside the Big Thompson River, into Estes Park.

Exiting Estes Parks to the south, Route 7 runs mostly outside the eastern boundary of the park. However, it also provides access to several popular trail heads which lead back into the park via hundreds of miles of hiking trails. Along this eastern route, progressing southbound, you'll have your choice of the Lily Mountain and Lily Lakes trail heads, followed by the popular Long's Peak and Wild Basin. But, if short walks and easy hikes are more your speed, enter RMNP via the Beaver Meadows Visitor Center and proceed southwest down the length of Bear Lake Road. Take the short side excursions to Moraine Park, Glacier Basin and Sprague Lake, as you progress toward the final destination of Bear Lake itself. Finally, if you're in the northeastern part of RMNP during the summer, a drive across the Trail Ridge Road is a must (at least as far west as the Alpine Visitor Center). This route is high elevation and peaks out at nearly 12,200 feet (where you are likely to encounter snow well into the summer months). The many vistas and wildlife viewing opportunities are not to be missed. Since the Continental Divide runs through RMNP, you have opportunities to cross it along this route (most such crossings are posted for photo ops). Past the 11,800 foot elevation Alpine Visitor Center, one could elect to continue driving to explore the western and southwestern areas of the park.

The other option for touring those areas would be to first fly to Granby into Grand Co. Airport (GNB), just

The Painted Wall in Black Canyon of the Gunnison National Park is the highest cliff in Colorado, rising from riverbed to peak, over 2,300 feet (or about twice the height of the Empire State Building).

outside the southwestern reaches of the park. GNB is a sleepy airport and its 5,000-foot, east-west runway is minimal considering the airport's whopping 8,207-foot elevation. Yet, geographically speaking, it is well situated for exploring the "back side" of RMNP. While Granby has self-serve fuel (100LL and Jet A) and parking available, arranging ground transportation there would require special effort. Traffic into RMNP tends to be lighter from this direction and the long back-track via the Trail Ridge Road becomes unnecessary. Along the route from GNB, the Shadow Mountain Lake and Grand Lake areas are technically just outside the park but offer many great opportunities for water-based activities at the park's southwestern edges. Re-enter the park near the Kawuneeche Visitor Center and there are many trail heads and historic sites to choose from as you progress north.

Black Canyon of the Gunnison National Park (BCGNP)

If you're looking for something dramatic, look no further than Colorado's Black Canyon. Few canyons on earth can compete with its combination of steep and soaring canyon walls, narrow cross-section and spectacular overlooks. While BCGNP is relatively new as a national park (established in 1999), it has been part of the NPS for decades. It was designated a national monument in 1933 (and some current aeronautical charts still erroneously label it as such). Because it is a relatively small park (by western standards) it is perfect for short layovers, as it is near two popular and well developed western Colorado airports; Gunnison-Crested Butte Regional (GUC) and Montrose Regional (MTJ).

Given the name, one would think that Gunnison Regional would be the preferred airport for visiting BCGNP. That is not necessarily the case though. GUC's wide and long runway (9,400 x 150-feet) helps to compensate for its nearly 7,700 foot elevation. While it is equipped with ILS and RNP approaches, surrounding high terrain makes those approaches less than optimal. For the ILS, minimums are essentially VFR due to the airport's position, relatively deep in the Gunnison Valley, surrounded by terrain exceeding 13,000 feet. The RNP approaches offer true IFR weather capabilities, but few King Airs or King Air operators will be equipped and authorized to fly them. Nonetheless, the FBO (AvFlight Gunnison) offers all the necessary services, including rental cars. From GUC, you are close to the Curecanti National Recreation Area, which eventually does connect with BCGNP. To be certain, this route is stunningly beautiful to drive, but it is long (plan a minimum of 2.5 to three hours to reach BCGNP's South Rim Visitor Center and two hours to the North Rim Ranger Station).

On the other hand, Montrose offers several advantages. MTJ is positioned in a broader and lower valley than GUC. It's lower elevation (5,759 feet), two long runways (10,000 and 7,500 feet), and multiple approaches (ILS & GPS/LPV) offer more operational options, especially when IFR conditions exist and low approach minimums are required. Atlantic Aviation offers robust FBO services and geographically MTJ is much closer to the heart of BCGNP. The most popular area for touring the park is along the south rim of the canyon, which is only 30 minutes driving from MTJ. Even the more remote north rim can be reached within 1.5 hours.

Once at the visitor center, I recommend walking the Oak Flat Trail. It is easy hiking and offers a great introduction to the canyon views. Along South Rim Road, a series of many roadside parking areas allow taking brief hikes out to the canyon's rim for some truly breathtaking views. A word of caution though: Those viewpoints are often right at the edge of the canyon's near-vertical walls, with minimum railing. If acrophobia (fear of heights) is a problem for you, these views will make you sweat! The average height of Black Canyon's walls in this area is 2,000 feet and their sheer vertical nature, combined with the canyon's narrow width make for vertigo-inducing visuals. Also on the south rim, East Portal Road provides access to the canyon's bottom, along the Gunnison River which carved it. The drive is steep and curvy, but once at river level the park's name becomes more meaningful. For, it is only down there that one can appreciate the narrow verticality of the gorge and the blackened appearance of the canyon walls and floor. In some areas, Black Canyon is so narrow and so deep that sunlight only reaches the bottom of the gorge for 35-40 minutes per day, when the sun is directly overhead. The rest of the daylight hours, one side of the canyon glows in the sun's rays, while the other side appears almost inky black, deprived of light by its own shadow.

In the next issue, we'll cover Colorado's other two national parks and the airports that serve them. Mesa Verde National Park (MVNP) in the Four Corners area and Great Sand Dunes National Park (GSDNP) in south central Colorado are vastly different from one another. We'll explore their differences and what each has to offer the pilot who's touring with family or making the most of layover time. Whatever your agenda or reason for visiting, Colorado and its public airports and protected lands will likely have you wishing to return as you take in the views during your departure. KA

Matthew McDaniel is a Master & Gold Seal CFII, ATP, MEI, AGI, & IGI and Platinum CSIP. In 30 years of flying, he has logged over 19,500 hours total, over 5,600 hours of instruction-given, and over 2,500 hours in various King Airs and the BE-1900D. As owner of Progressive Aviation Services, LLC (www.progaviation.com), he has specialized in Technically Advanced Aircraft and Glass Cockpit instruction since 2001. Currently, he is also an Airbus A-320-Series captain for an international airline, holds 8 turbine aircraft type ratings, and has flown over 95 aircraft types. Matt is one of less than 15 instructors in the world to have earned the Master CFI designation for 9 consecutive two-year terms. He can be reached at: *matt@progaviation.com* or (414) 339-4990.

The ramp at the Gatherings is populated with King Airs, some that the vendors have brought to show their products installed.

King Air Gathering

Sept. 23-26, 2021

REGISTER NOW!

by Kim Blonigen

Available spots are filling up every day for the 2021 King Air Gathering (KAG) being held Sept. 23-26 at the Beechcraft Heritage Museum adjacent to the Tullahoma, Tennessee, Regional Airport (THA). If you are thinking you might like to attend, you may not want to wait much longer to register as space is limited.

If you arrive early enough Thursday, Sept. 23, starting at 1 p.m. and running every hour until 5 p.m., there will be guided museum tours from "special" tour guides – four people who have personal knowledge of Beechcraft history. That evening enjoy meeting other King Air owners and pilots at a Welcome Cocktail Reception sponsored by

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Friday and Saturday will be filled with educational seminars including informational insight from the NTSB and Beechcraft air safety investigators, pilot operations, maintenance intel and a look at the history of the King Air. Among the breakout sessions: avionics presentations from Garmin and Collins Aerospace, tips for pilots using EFBs ForeFlight or Garmin Pilot, and a deep technical dive into PT6 engines or a closer look at the various autopilots on the King Air models.

There will also be time to meet with King Air-specific vendors who will have exhibits located in the conference area for face to face time during breaks.

The Travel Air Mystery Ship shown here in the museum's Beech Center. (Photo credit: Bob Burns)

Attendees at the 2019 King Air Gathering listening to Tom Clements. The exhibits are around the perimeter of the room so you can visit with them throughout the day. (Photo credit: David Frank)

Friday night will commence with the inaugural "King Air Hall of Fame" awards, followed by cocktails and Nashville barbecue with local entertainment all compliments of Stevens Aerospace & Defense Systems. You won't want to miss celebrating those who helped make the King Air what it is today, while enjoying the tastes and sounds of Nashville.

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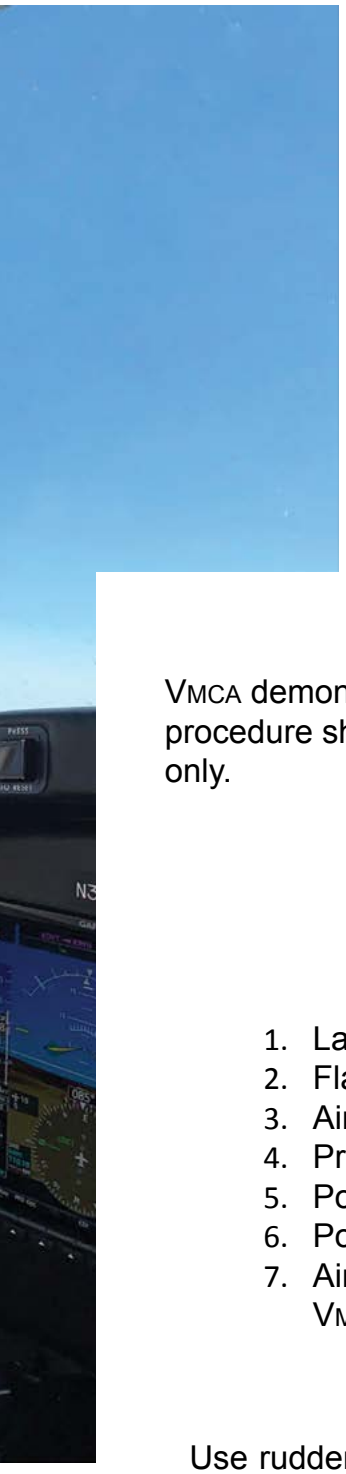
Practice Demonstration of V_{MCA}

by Tom Clements



Have you ever seen this procedure described? I hope your answer is "Yes," since it is the title of a procedure presented in the Pilot's Operating Handbook (POH).

Quiz time: In what POH section will you find it? Section 3, Emergency Procedure? Section 3A, Abnormal Procedures? Or Section 4, Normal Procedures?

I will wager that less than half of our readers answered correctly, with "Section 4, Normal Procedures." But indeed that's where it is found, right after the procedure titled "Simulating One-Engine-Inoperative (Zero Thrust)." Since multi-engine training is a *normal procedure* that can be done, and often is done, in King Airs this makes both of these procedures quite normal.

Here is the entire written procedure found in the B200 model's POH:

PRACTICE DEMONSTRATION OF VMCA

VMCA demonstration may be required for multi-engine pilot certification. The following procedure shall be used at a safe altitude of at least 5,000 feet above ground in clear air only.

WARNING

IN-FLIGHT ENGINE CUTS BELOW VSSE SPEED

OF 104 KNOTS ARE PROHIBITED.

1. Landing Gear..... UP
2. Flaps..... UP
3. Airspeed ..... ABOVE 104 KNOTS (VSSE)
4. Prop Levers ..... HIGH RPM
5. Power Lever (simulated inoperative engine)..... IDLE
6. Power Lever (other engine)..... MAXIMUM ALLOWABLE
7. Airspeed – Reduce approximately 1 knot per second until either VMCA or stall warning is obtained.

NOTE

Use rudder to maintain directional control (heading) and aileron to maintain 5° bank towards the operative engine (lateral attitude). At the first sign of either VMCA or stall warning (which may be evidenced by: inability to maintain heading or lateral attitude, aerodynamic stall buffet, or stall warning horn sound) immediately initiate recovery: reduce power to idle on the operative engine and immediately lower the nose to regain VSSE.

Photo credit: King Air Academy

I believe that this procedure is an important one for all newcomers to the King Air to experience and I included it in most of my initial flight training sessions. Simulators are wonderful training devices but they are stronger in some areas than others. This is one of those procedures that most simulators do not replicate well.

In 100% of the cases in which I have used this procedure in training, the demonstration was terminated when the indication of an impending stall was found. Never once was there an actual "inability to maintain heading or lateral attitude." Well, let me clarify that … actually, there were numerous times when the heading started to drift toward the inoperative engine's side and the student felt that he/she had actually found V_{MCA} and therefore terminated the maneuver. However, he/she had not pushed the rudder pedal as far as it would go … usually, not by a long shot! When we repeated the demonstration with proper control usage, the impending stall indications were the reason the demonstration was terminated.

When I was a neophyte factory King Air instructor back in 1972, I recall one of the test pilots commenting to me that V_{MCA} testing was one of the most stressful maneuvers that experimental test pilots had to perform. "Wow! It gets really scary, huh?" was my response. His answer was, "Yes, but the only scare is that we will run out of fuel before we get back to Beech Field!"

I found that the only way the loss of heading or lateral attitude control would happen *before* the stall was when the airplane was exceedingly light in weight. Thus, minimum fuel was always on board during this testing. Prior to this, I had believed that all of the speed numbers published were based on maximum gross weight … as you probably think also. But, no, V_{MCA} is usually only found – at least in Beech twins – at light weight.

V_{SSE} is the abbreviation for *Intentional One-Engine-Inoperative Speed.* It is defined as: *"A speed above both V_{MCA} and stall speed, selected to provide a margin of*

lateral and directional control when one engine is suddenly rendered inoperative. Intentional failing of one engine below this speed is not recommended."

This "V speed" was not defined until sometime in the 1970s. It came in response to the distressing number of multi-engine training accidents that were forthcoming from V_{MCA} demonstrations. As instructors, it makes sense to never give a student an engine failure while too close to loss of control speed!

If I were the one to have written Beech's "Practice Demonstration of V_{MCA}" procedure, I would have made two changes … for the better, I hope. First, in the "Note" portion, reducing power to idle is the correct response when V_{MCA} is encountered. (And as I have presented, that never happens during this demonstration!) But for a stall recovery all we need to do is reduce the angle of attack by lowering the nose. A lot of unnecessary and undesirable loss of altitude will be experienced if power is retarded during the stall recovery, especially all the way to idle. I would suggest that leaving power alone on the good engine and simply lowering the nose to increase airspeed would be the better, safer procedure.

Second, again in the "Note" portion of the procedure, I would add "or above" after "lower the nose to regain V_{SSE}." Wouldn't we almost always want more than just this very low speed as the demonstration is terminated? Of course. Additionally, I will mention that I usually start the demonstration at an airspeed of about 120 KIAS, near blue line. That complies with the "Above 104 knots (V_{SSE})" yet provides more time to ease into the maneuver.

You will notice that use of trim is not mentioned in the procedure. The comment about reducing airspeed by "approximately 1 knot per second" can only be accomplished by raising the nose gradually and climbing since maximum allowable power remains on the "good" engine. It is common and correct to use pitch trim to compensate for the changing elevator force as speed is reduced.

But what about rudder trim? Since it is not addressed, one could argue that you can "Do whatever you want." On the other hand, since encountering true V_{MCA} during normal flying almost always would involve an unexpected engine loss of power with little reaction time, I request that no rudder trim input be made. That allows the student to experience as great of a rudder force as he/she will ever be required to give. Hard? Sure! Manageable? Quite easily!

If your particular King Air model is equipped with the rudder boost system, it will be operative during the V_{MCA} demonstration. In the case of the 300-series, in which the system varies the rudder force applied based on the difference in engine power, you will be receiving

a bit less help during this demonstration than when an engine has actually flamed out. Why? Because the lower power engine is at zero thrust, still running, not totally dead. Keep in mind, as I have tried to emphasize in previous articles, that rudder boost *helps* by applying some force on the appropriate rudder cable but it, alone, is not nearly enough at V_{MCA}. Use your legs!

Speaking of zero thrust: I believe the torque/RPM combination that Beech specifies in the procedures for their different models are accurate. However, in my experience, they tend not to be as consistent as a method I developed and have used for a very long time. It appears that the torque indication – at these very low values – is not as accurate nor as reproducible as the other method.

Try this: Bring the power lever to idle and pull the propeller lever back to, but not into, the feather detent. This will set the propeller governor at its lowest governing speed. In the 200-series, for example, you'll have close to 1,600 RPM. Now adjust the condition lever to get between 60 and 65% N_1 or N_g. I bet that torque will be quite close to Beech's Zero Thrust value but pay it no mind.

Some King Air models base V_{MCA} on a feathered, not a windmilling, propeller. This applies to all of the 300-series, as well as to most four-blade-equipped members of the 200-series. This changes the V_{MCA} demonstration procedure by setting zero thrust on the lower-powered engine instead of idle.

Here are a few closing thoughts. As I stated, the real airplane is usually the only accurate way to experience the true handling characteristics of your King Air. With proper safeguards – primarily, enough altitude – these maneuvers can be done very safely. If you have not yet experienced an idle-power, full break, stall in your King Air, you should! These are very gentle airplanes in which a stick shaker and/or stick pusher are not required. They stall very much like a big Bonanza. How about pumping the landing gear down by hand? Ever done it in the actual airplane? It bears only passing similarity to the simulator, doesn't it? I firmly believe that the more comfortable we become in our actual airplane the more likely it is that we will react in a correct and timely fashion when facing an abnormality or emergency. KA

King Air expert Tom Clements has been flying and instructing in King Airs for over 46 years and is the author of "The King Air Book" and "The King Air Book II." He is a Gold Seal CFI and has over 23,000 total hours with more than 15,000 in King Airs. For information on ordering his books, contact Tom direct at *twcaz@msn.com*. Tom is actively mentoring the instructors at King Air Academy in Phoenix.

If you have a question you'd like Tom to answer, please send it to Editor Kim Blonigen at *editor@blonigen.net*.

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Bigger and Better – The Model 100

In its ongoing quest to develop improved versions of the highly successful King Air platform, Beech Aircraft Corporation once again dipped into its "recipe" book and blended the best of the Model 90 and the Model 99 to create the Model 100 – flagship of the Beechcraft fleet.

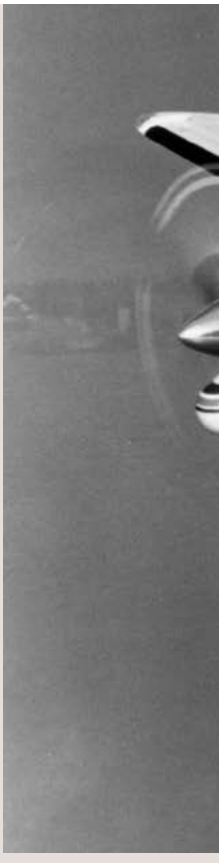
by Edward H. Phillips

By the late 1960s, Olive Ann Beech had come a long way from the "Roarin' Twenties" of the Travel Air Company. In those halcyon days, the open-cockpit biplane was state-of-the-art and no respectable lady could go "aviating" without a leather helmet, bearskin flying suit and a pair of goggles. "Mr. Beech's idea of flying was to take me up and turn the airplane upside down," Mrs. Beech once remarked to the author with a wry grin. She enjoyed flying but never harbored a desire to become an aviatrix in her own right – she left that to the likes of Amelia Earhart, Ruth Elder and Louise McPhetridge von Thaden.

It was, in fact, Ms. Thaden who in 1936 was encouraged by Mrs. Beech to compete in the prestigious Bendix race from New York to Los Angeles – an all-out speed event that had been dominated by male pilots until women were allowed to compete that year. Flying with co-pilot Blanche Noyes in a nearly stock Model C17R powered by an aging Wright radial engine, the two ladies beat the best that men (and other women pilots) had to offer and collected a handsome sum for their efforts, much to the delight of Mrs. Beech.

But the Kansas girl hired by Clyde V. Cessna in 1925 to run Travel Air's front office had, over the previous 40 years, witnessed the constant evolution of aviation from barnstorming to a billion-dollar business that held tremendous potential for future growth.

One may be asking, "What does all of that have to do with the Model 100 King Air?" Although the venerable C17R pales in comparison to the modern, sleek and comfortable King Air, the story serves to underscore the inevitable quest of one aircraft company to build the best business airplanes money could buy. Olive Ann Beech believed in that creed with the same gusto as that of her husband, Walter H. Beech. Working together with a few hand-picked associates from the Depression-wrecked Travel Air Company, early in 1932 they co-founded the Beech Aircraft Company in a vacant building leased from the equally defunct Cessna Aircraft Company once led by Walter's longtime friend, Clyde Cessna. Always choosing his words carefully, Mr. Cessna once told the press that, "Speed is the only reason for flying." He was, of course, correct and that mandate remained at the forefront of business



The Model B100 King Air was developed to accept Garrett TPE-331 turboprop engines and provide a second source of powerplants in addition to Pratt & Whitney Canada's PT6 series. Plans for a Garrett-powered King Air began in 1972 as part of a study to determine the feasibility of marketing a companion airplane to the 100/A100 series.
(Special Collections and University Archives, Wichita State University Libraries)

aircraft development throughout the next 40 years. As the decade of the '70s approached, that timeless fact was still uppermost in the minds of Beech Aircraft engineers as they worked to develop a worthy successor to the Model 90 King Air. The result was hailed as the next logical step up the King Air ladder for customers who had outgrown their Model 90.

Designated the Model 100, the next-generation Beechcraft cabin was designed to accommodate up to 13 people in high-density configuration. In addition, the new airplane borrowed the wings and electrically-trimmed horizontal stabilizer system from the Model 99. These were mated to a lengthened fuselage of the same cross-section as that of the Model C90. Two Pratt & Whitney Canada PT6A-28 engines, each rated at 680 shp for takeoff and 620 shp for cruise, turned four-blade, constant-speed, fully-reversible propellers that gave the Model 100 a maximum cruise speed of 287 mph – a significant increase over the C90's 253 mph.

More speed, however, was not the Model 100's only strongpoint – with main fuel tanks capable of holding up to 388 gallons of turbine fuel and optional auxiliary tanks with a capacity of 82 gallons, the latest Beechcraft could fly nearly 1,500 statute miles, while keeping cabin occupants comfortable at high altitudes thanks to its bleed air pressurization system that was limited to 4.7 pounds per square inch (psid). Another key improvement was the airplane's maximum gross weight of 10,600 pounds – 1,000 pounds more than the C90.

Maiden flight of the prototype Model 100 occurred March 17, 1969, followed by Federal Aviation Administration (FAA) Type Certification July 24 of that year. Beechcrafters built 89 Model 100s in the first two years of production that began in 1969 and ended in 1970. Lessons learned from customers during that time led to the introduction for the 1971 model year of the upgraded A100. First flown March 20, 1971, the latest King Air to emerge from the drawing boards was essentially identical to its predecessor, but it did boast a series of improvements. These included a 900-pound increase in maximum takeoff weight to 11,500 pounds and fuel capacity was increased to allow an additional 96 gallons of fuel to be carried, stretching maximum range to more than 1,500 statute miles.

The Model 100 entered service in 1969 and quickly became the flagship of the company's expanding fleet of King Airs. Beech Aircraft Corporation's latest executive turboprop answered the call of customers for more speed, cabin comfort and utility. (Special Collections and University Archives, Wichita State University Libraries)

Performance remained similar to the Model 100 with a maximum cruise speed of 271 mph at an altitude of 21,000 feet, and a service ceiling of 24,850 feet. Other minor changes included four-blade propellers with reduced span to increase ground clearance during taxi and landing. The FAA issued the A100 an amended Type Certificate May 7, 1971, and production continued until 1979 after 159 airplanes had been built. In addition to commercial sales of the A100, the U.S. Army, a longtime operator of King Airs modified for military missions, ordered five A100s in 1971 to serve as VIP and utility transports. Bearing the designation U-21F, all five were delivered in 1971. Except for certain Army equipment, the airplanes were identical to the commercial version.

The final variant of the Model 100 was the B100 King Air that made its initial flight March 20, 1975, from Beech Field in Wichita, Kansas. The B100's major departure from the A100 was its Garrett AiResearch TPE-331-6-251B/252 turboprop engines that featured a fixed shaft design instead of the PT6A-28's reverse-flow, free-turbine configuration. Installing Garrett's engine on a King Air airframe was not an epiphany. As early as 1972, Beech Aircraft Corporation's experimental department had conducted flight tests of a company-owned King Air equipped with TPE-331 engines. That initiative was part of an in-house engineering feasibility study aimed at determining compatibility of the powerplants with the King Air airframe.

The engines, each rated at 840 shp but flat-rated to 715 shp, still propelled the B100 to a maximum cruising speed of 306 mph – more than 30 mph faster than its A100 stable mate. Other than its advantage in speed, the B100's range (1,501 statute miles) and pressurization system were about equal to those of the PT6A-powered A100.

Throughout the 1970s and into the early 1980s, demand for the A100 and B100 continued and both versions maintained their popularity with the business aviation community. When production was terminated, Beech Aircraft had manufactured 246 A100s and 137 B100s across a 14-year span that ended in 1983. The time had come, however, for the 100-series airplanes to pass the crown to the company's new flagship, the Model 200 Super King Air – an airplane that would set not only a new standard for cabin-class, turboprop business airplanes, but lift the company that built it to new heights of success. KA

Ed Phillips, now retired and living in the South, has researched and written eight books on the unique and rich aviation history that belongs to Wichita, Kan. His writings have focused on the evolution of the airplanes, companies and people that have made Wichita the "Air Capital of the World" for more than 80 years.

Textron Aviation Announces Customer Portal Dashboard

Textron Aviation recently released the Customer Portal Dashboard (*https://ww2.txtav.com/Dashboard*). The company says this update allows customers to customize their tools and request access to all aspects of the Customer Portal through one, easy-to-use webpage. The tiled Dashboard includes direct links to Billing Management, Parts & Claims, Program Balances, Service Management, Technical Publications and EProcurement.

Service Management is the new home for all tools previously available at *ww2.txtav.com/CustomerSupport/CustomerPortal*. These tools include My Fleet, Find a Service Center and Request Aircraft Service. The functionality of these tools has not changed, but the access to them has been redirected to the Service Management tile of the Customer Portal Dashboard.

For any questions regarding the Customer Portal Dashboard, please reach out to the Customer Portal team at *customerportal@txtav.com*

Garmin Announces TXi Engine Indication System for Twin Turboprop Aircraft including King Air 90 series

Garmin® International, Inc. recently announced TXi™ engine indication system (EIS) support for select twin turboprop aircraft including the King Air 90 series. Twin turbine aircraft owners and operators will benefit from TXi EIS with features such as engine timers, exceedance recordings, dynamic engine indications, as well as wireless data logging that combine to reduce pilot workload, improve engine efficiency and reduce maintenance costs.

"This significant update to TXi EIS allows twin turboprop owners and operators to further modernize their cockpits," said Carl Wolf, Garmin vice president of aviation sales and marketing. "We are proud to offer a state-of-the-art engine indication solution that replaces expensive-to-maintain traditional round dial gauges, and also provides easy wireless access to valuable engine performance data to help protect the investment made in these turboprop engines."

Twin-Turbine EIS

Owners and operators of these aircraft can now view EIS information on a dedicated 7-inch TXi flight display in portrait mode and replace aging round dial EIS gauges with a modernized display to more clearly read engine information and simplify the cockpit. Owners and operators can also benefit from an outside air temperature (OAT) indication that can be set to alert the pilot at thresholds determined by the pilot operating handbook (POH), and actions such as turning on pitot heat can clear the alert from the display. These new enhancements and capabilities are available on

King Air 90 series aircraft with both factory-equipped and retrofit Blackhawk engine upgrades.

Multi-engine dynamic EIS markings and fuel display enhancements

New multi-engine dynamic EIS markings clearly illustrate specific phase of flight limitations so pilots can more easily interpret engine data at a glance[1]. Additional improvements allow for easier entry of fuel onboard during initialization at start-up and the ability to display total fuel onboard to more easily reference the amount of fuel available. To make fuel calculations simpler and more accurate, pilots now also have the ability to sync fuel quantity with an onboard fuel computer.

Additional new capabilities

There are several new updates for the primary flight display (PFD) that include:

- Enhanced autopilot indications for Garmin GFC 500, GFC 600 and Avidyne DFC 90 autopilot installations include indicated airspeed (IAS) and vertical speed (VS) bugs that show solid when activated and hollow when inactive
- TXi PFD installations with a 7-inch landscape display have a new down arrow and dashed line that will now point out the direction of the heading bug when selected to a heading out of view on the HSI, an enhancement to help with situational awareness and help prevent autopilots from changing directions in a 180-degree turn
- A new optional G-meter will indicate acceleration (G-force) that could be valuable during turbulence or aerobatic maneuvers

These new TXi EIS features for twin turboprop aircraft are expected to be available in July through the authorized Garmin dealer network. The TXi series also come with a two-year warranty, which is supported by Garmin's award-winning aviation support team. For additional information, visit www.garmin.com/TXi or contact a local Garmin authorized dealer.

1. Must be configured at setup and is dependent on AFM.

Genesys Aerosystems Adds New Features to S-TEC 3100

Genesys Aerosystems recently announced an update to its S-TEC 3100 autopilot. Referenced as Version 1.4, it comprises of both software and hardware changes. The new hardware features a white backlit display perfect for bright sunlit panels or steep viewing angles.

An updated bezel accompanies the change in display and features an optional VNAV button or menu (MNU) button. (Please note the release of the VNAV button will be three months after release of the new bezel with MNU button.) The software update introduces support for GPS enroute VNAV (when paired with an approved EFIS/GPS navigator, which currently includes: EFIS – Garmin G500 TXi™, Garmin G600 TXi™ and GPS – Garmin GTN™ 750) new mode annunciations, advanced integration with Aspen MAX PFD, and many general improvements based on customer feedback.

When paired with an approved EFIS display and GPS navigator that supports enroute VNAV, the Version 1.4 S-TEC 3100 will follow the step-down vertical guidance typically found with Standard Terminal Arrival Routes (STARs). The updated software also supports two-way communication of lateral and vertical targets, display of modes, and advanced integration with the Aspen MAX primary flight display. An advanced autopilot unlock is required from Aspen.

The Version 1.4 upgrade costs $1,495 for the full hardware and software update, however Genesys is offering a $500 discount if the bezel upgrade is purchased before Dec. 31, 2021. The software only upgrade (no VNAV capability, no new bezel/LCD), is free to existing S-TEC 3100 customers. New orders will ship standard with the bezel and 1.4 software beginning when the individual STCs are approved. STC approval for all of the aircraft currently approved for the 3100* is expected to be completed by the end of Q3 (with hardware to include the VNAV button by the end of the year). International validations will follow. Please contact your avionics installation center to obtain a quote for this upgrade or new installation.

A full list of features in the Version 1.4 update can be found at *genesys-aerosystems.com/stec3100-1.4* .

**Editor's note: Current King Air models that are approved for the S-TEC 3100 are: King Air 65-90, 65-A90, 65-109-1, 65-A90-4, B90, C90, C90A, C90GT, E90, F90, H90,100, A100, A100A, A100-1, B100, 200, 200C, 200T, A200, A200CT (excluding serial number FE-1 and above), B200, B200C, B200CT and B200T.*

Marsh Brothers Brake Master Cylinder Upgrade Kit Receives FAA Approval

Following the STC approval from Transport Canada in February 2021, Marsh Brothers Aviation has secured FAA approval for their Beech® brake master cylinder upgrade/repair kit.

The Marsh Brothers kit offers an upgraded lip seal which replaces the piston wiper and O-ring with a single seal/wiper. The single lip seal replaces two elements of the original design and offers the same benefits over a traditional O-ring.

This FAA approved brake master cylinder upgrade/repair kit comes with all the parts needed to rebuild a master cylinder including static gland seal, piston head seal and backup ring, new retaining clips, nut and cotter pin. Also included in the kit is specialized tooling that was developed to aid installation of the Thorseal. Two kits are now available for sale, including one for the King Air, OEM 90-380001 series brake master cylinder assembly.

For more information, call (905) 335-1440 or go to *www.MarshBrothersAviation.com* KA

Blackhawk Enters Avionics Arena

Blackhawk Aerospace announced recently that it has expanded its portfolio of products and services. Blackhawk Aerospace Technologies, Inc. (BAT), a newly formed business entity, has acquired all assets from Columbia Avionics & Aircraft Services, Inc. based at the Columbia, Missouri, Regional Airport (KCOU).

Columbia Avionics has been in business since 1995 working to develop new STCs using avionics packages for Citations and other business jets. Blackhawk plans to expand on Columbia's success and add a new focus on creating STCs for the turboprop market, which their global network of certified dealers can provide to aircraft owners and operators. Additional capabilities include maintenance, airframe modifications, and avionics installations.

Blackhawk Aerospace President and CEO Jim Allmon said, "The avionics STC development capabilities of the company will not only provide our dealers with more offerings for their customers, but it will also help Blackhawk to certify engine-to-avionics integrations more quickly and efficiently."

BAT will be led by industry-experts Mark Wilken, Conrad Theisen, Lance Fox, and Shad Sones who bring a combined 110 years of avionics experience to the team. Wilken will lead BAT as the company's president and brings 30 years of experience including the development of more than 50 STCs for installing the latest avionics systems on Beechcraft models including the King Air. Theisen will be appointed as vice president of sales and marketing, bringing 25 years of avionics expertise and experience working with avionics OEMs on retrofit programs for King Air series aircraft. Fox will oversee new STC programs as the director of engineering and brings over 30 years of experience developing an extensive STC portfolio and working closely with avionics and engine OEMs as the two systems became increasingly interconnected. Sones will oversee day-to-day operations at the Columbia, Missouri, facility as general manager and brings 25 years of industry experience to the team.

Wilken said, "Blackhawk Aerospace's long-standing reputation in the King Air series aircraft along with the extensive Citation avionics, STC and maintenance capabilities at our Columbia facility is a perfect match. BAT will bring King Air owners and operators the personalized customer attention, quality and technical experience they have been looking for."

For more information about Blackhawk Aerospace Technologies and their offerings, visit *https://technologies.blackhawk.aero* or give them a call at +1 (573) 874 4141. KA

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